



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

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MODULE HANDBOOK

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|---|---|
| Module name | Programming |
| Module level | Undergraduate |
| Code | MII-1201 |
| Courses (if applicable) | Programming |
| Semester | Fall (Odd) |
| Contact person | Drs. Janoe Hendarto, M.Kom. |
| Lecturer | Drs. Janoe Hendarto, M.Kom. Moh Edi Wibowo, S.Kom., MKom., Ph.D Yunita Sari, S.Kom., M.Sc., Ph.D. Triyogatama Wahyu Widodo, M.Kom Y. Suyanto., Drs., M.I.Kom, Dr I Gede Mujiyatna, S.Si., MKom. Dr. Andi Dharmawan, S.Si., M.Cs. Wahyono S.Kom., Ph.D. Faizal Makhrus, S.Kom., M.Sc., Ph.D. Isna Alfi Bustoni, S.T, M.Eng. |
| Language | Bahasa Indonesia and English |
| Relation to curriculum | 1. Undergraduate degree program, compulsory, 1 st semester. 2. International undergraduate program, compulsory, 1 st semester. |
| Type of teaching, contact hours | 1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 30 students. |
| Workload | 1. Lectures: 3 x 50 = 150 minutes (2 hours 30 menit) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week. |
| Credit points | 3 credit points (sks). |
| Requirements according to the Examination regulations | A student must have attended at least 75% of the lectures to sit in the exams. |
| Recommended prerequisites | - |

| <p>Learning outcomes (course outcomes) and their corresponding PLOs</p> | <p>After completing this module, a student is expected to:</p> <p>CO1 Have knowledge of basic programming concepts, algorithms, and can think computationally.</p> <p>CO2 Have knowledge about data structures and C++ programming language.</p> <p>CO3 Have knowledge about data types for array and records / struct and can implement them in a computer program.</p> <p>CO4 Have knowledge about modular programming and can implement it in a computer program.</p> <p>CO5 Be able to explain and competent in how to implement sorting and searching algorithms.</p> <p>CO6 Be able and competent in solving more complex programming problems.</p> <table border="1" data-bbox="456 619 1339 842"> <thead> <tr> <th colspan="2">PLO</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> <th>CO4</th> <th>CO5</th> <th>CO6</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Program Learning Outcome (PLO)</td> <td>PLO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PLO2</td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PLO3</td> <td></td> <td></td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>PLO4</td> <td></td> <td></td> <td></td> <td></td> <td>√</td> <td></td> </tr> <tr> <td>PLO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>√</td> </tr> </tbody> </table> | PLO | | CO1 | CO2 | CO3 | CO4 | CO5 | CO6 | Program Learning Outcome (PLO) | PLO1 | | | | | | | PLO2 | √ | √ | | | | | PLO3 | | | √ | √ | | | PLO4 | | | | | √ | | PLO5 | | | | | | √ |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|------|--|--|--|--|--|--|------|---|---|--|--|--|--|------|--|--|---|---|--|--|------|--|--|--|--|---|--|------|--|--|--|--|--|---|
| PLO | | CO1 | CO2 | CO3 | CO4 | CO5 | CO6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Program Learning Outcome (PLO) | PLO1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PLO2 | √ | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PLO3 | | | √ | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PLO4 | | | | | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PLO5 | | | | | | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Contents</p> | <ol style="list-style-type: none"> 1. Programming concepts. 2. Introduction to Computational Thinking and Algorithms 3. Kinds of data types and variable declarations 4. Arithmetic, relational and logical operations 5. Control Structures (Conditional and loop) 6. Basic Data Structures: arrays, structs, strings, pointers and files 7. Introduction to Functions: definitions, local and global variables, function parameters 8. Recursive Functions 9. Simple Sorting Algorithm: Bubble Sort, Insertion Sort, Selection Sort 10. Advanced Sorting Algorithms: Quick Sort, Merge Sort 11. Searching Algorithms: Binary, Sequential and Hashing 12. Problem Solving | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Study and examination requirements and forms of examination</p> | <p>The evaluation is done in 3 forms, namely:</p> <ol style="list-style-type: none"> 1. Trial, either midterm or semester test, 2. Six tasks, including individual or group assignments to be completed within a certain timeframe, and 3. Five quizzes, held on face-to-face, once before midterm exam and once after midterm exam, with a short answer form. <p>Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Media employed</p> | <p>LCD, blackboard, and websites.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Assessments and</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Evaluation | Type | Percentage | CO1 | CO2 | CO3 | CO4 | CO5 | CO6 |
|------------|-----------------|--|-----|-----|-----|-----|-----|-----|
| | Quiz | 10% | √ | √ | √ | √ | √ | |
| | Individual Task | 25% | √ | √ | √ | √ | √ | |
| | Group Task | 10% | | | | | | √ |
| | Midterm Exam | 25% | √ | √ | √ | | | |
| | Final Exam | 30% | | | √ | √ | √ | |
| | Total | 100% | | | | | | |
| | Reading List | <p>W1 : Thomas H. Cormen, Charles E. Leiserson, et.al., Introduction to Algorithms, third edition, 2014.</p> <p>W2 : Brian W. Kernighan, Dennis M., The C Programming Language 2nd Edition. Ritchie, ISBN-13: -0131103627.</p> <p>A1 : Adam Drozdek, Data Structures and Algorithms in C ++, 2012, ISBN 0-534-37597-9.</p> <p>A2 : Munir, R., 2004, Algoritma dan Pemrograman, Informatika, Bandung.</p> | | | | | | |

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